Listing of the Claims

1. (Original) A display system for displaying an image, comprising:

a modulator configured to produce a light beam that sequentially bears a plurality of color image sub-frames, wherein each color image sub-frame corresponds to one color in a plurality of colors;

display optics configured to display said light beam such that said plurality of color image sub-frames are successively displayed to form said image; and

a wobbling device configured to displace said light beam between display of each of said color image sub-frames such that a color image sub-frame corresponding to each color in said plurality of colors is displayed in each of a number of image sub-frame locations.

2. (Original) The system of claim 1, further comprising:

an image processing unit configured to process image data defining said image and generate said image sub-frames; and

a sequential color device configured to shine a color light beam on a face of said modulator, said color light beam having a color that sequentially rotates through said plurality of colors;

wherein said modulator is configured to modulate said color light beam according to said number of color image sub-frames to produce said light beam bearing said plurality of color image sub-frames.

3. (Original) The system of claim 1, wherein said plurality of color image sub-frames comprises a number of color image sub-frames equal to said number of image sub-frame locations multiplied by a number of colors in said plurality of colors.

4. (Original) The system of claim 3, wherein said number of image sub-frame locations comprises:

a first image sub-frame location; and

a second image sub-frame location;

wherein said second image sub-frame location is spatially offset by an offset distance from said first image sub-frame location.

5. (Original) The system of claim 4, wherein said offset distance comprises a vertical offset distance and a horizontal offset distance, said second image sub-frame location being vertically offset from said first image sub-frame location by said vertical offset distance and horizontally offset from said first image sub-frame location by said horizontal offset distance.

6. (Original) The system of claim 5, wherein said vertical offset distance and said horizontal offset distance are substantially equal to one-half of a pixel.

7. (Original) The system of claim 4, wherein said offset distance comprises a vertical offset distance, said second image sub-frame location being vertically offset from said first image sub-frame location by said vertical offset distance.

8. (Original) The system of claim 4, wherein said offset distance comprises a horizontal offset distance, said second image sub-frame location being horizontally offset from said first image sub-frame location by said horizontal offset distance.

9. (Original) The system of claim 4, wherein said successive display of said plurality of color image sub-frames comprises alternately displaying said plurality of color image sub-frames in said first image sub-frame location and in said second image sub-frame location.

10. (Original) The system of claim 9, wherein said plurality of colors comprises a first color, a second color, and a third color.

11. (Original) The system of claim 10, wherein said wobbling device is further configured to displace said light beam between the display of each of said plurality of color image sub-frames in a manner wherein, in the following order:

a first color image sub-frame corresponding to said first color is displayed in said first image sub-frame location;

a first color image sub-frame corresponding to said second color is displayed in said second image sub-frame location;

a first color image sub-frame corresponding to said third color is displayed in said first image sub-frame location;

a second color image sub-frame corresponding to said first color is displayed in said second image sub-frame location;

a second color image sub-frame corresponding to said second color is displayed in said first image sub-frame location; and

a second color image sub-frame corresponding to said third color is displayed in said second image sub-frame location.

12. (Original) The system of claim 9, wherein said plurality of colors comprises a first color, a second color, a third color, and a fourth color.

13. (Original) The system of claim 12, wherein said wobbling device is further configured to displace said light beam between the display of each of said plurality of color image sub-frames in a manner wherein, in the following order:

a first color image sub-frame corresponding to said first color is displayed in said first image sub-frame location;

a first color image sub-frame corresponding to said second color is displayed in said second image sub-frame location;

a first color image sub-frame corresponding to said third color is displayed in said first image sub-frame location;

a first color image sub-frame corresponding to said fourth color is displayed in said second image sub-frame location;

a second color image sub-frame corresponding to said first color is displayed in said second image sub-frame location;

a second color image sub-frame corresponding to said second color is displayed in said first image sub-frame location;

a second color image sub-frame corresponding to said third color is displayed in said second image sub-frame location; and

a second color image sub-frame corresponding to said fourth color is displayed in said first image sub-frame location.

14. (Original) The system of claim 3, wherein said number of image sub-frame locations comprises:

a first image sub-frame location;

a second image sub-frame location;

a third image sub-frame location; and

a fourth image sub-frame location.

15. (Original) The system of claim 14, wherein:

said second image sub-frame location is spatially offset by a first offset distance from said first image sub-frame location;

said third image sub-frame location is spatially offset by a second offset distance from said second image sub-frame location; and

said fourth image sub-frame location is spatially offset by a third offset distance from said third image sub-frame location.

16. (Original) The system of claim 15, wherein:

said first offset distance comprises a vertical offset distance and a horizontal offset distance, said second image sub-frame location being vertically offset from said first image sub-frame location by said vertical offset distance and horizontally offset from said first image sub-frame location by said horizontal offset distance;

said second offset distance comprises said vertical offset distance, said third image sub-frame location being vertically offset from said second image sub-frame location by said vertical offset distance; and

said third offset distance comprises said vertical offset distance and said horizontal offset distance, said fourth image sub-frame location being vertically offset from said first image sub-frame location by said vertical offset distance and horizontally offset from said third image sub-frame location by said horizontal

offset distance.

17. (Original) The system of claim 16, wherein said vertical offset distance and said horizontal offset distance are substantially equal to one-half of a pixel.

18. (Original) The system of claim 15, wherein said successive display of said plurality of color image sub-frames comprises alternately displaying said plurality of color image sub-frames in said first, second, third, and fourth image sub-frame locations.

19. (Original) The system of claim 18, wherein said plurality of colors comprises a first color, a second color, and a third color.

20. (Original) The system of claim 19, wherein said wobbling device is further configured to displace said light beam between the display of each of said plurality of color image sub-frames in a manner wherein, in the following order:

a first color image sub-frame corresponding to said first color is displayed in said first image sub-frame location;

a first color image sub-frame corresponding to said second color is displayed in said second image sub-frame location;

a first color image sub-frame corresponding to said third color is displayed in said third image sub-frame location;

a second color image sub-frame corresponding to said first color is displayed in said fourth image sub-frame location;

a second color image sub-frame corresponding to said second color is displayed in said first image sub-frame location;

a second color image sub-frame corresponding to said third color is displayed in said second image sub-frame location;

a third color image sub-frame corresponding to said first color is displayed in said third image sub-frame location;

a third color image sub-frame corresponding to said second color is displayed in said fourth image sub-frame location;

a third color image sub-frame corresponding to said third color is displayed in said first image sub-frame location;

a fourth color image sub-frame corresponding to said first color is displayed in said second image sub-frame location;

a fourth color image sub-frame corresponding to said second color is displayed in said third image sub-frame location; and

a fourth color image sub-frame corresponding to said third color is displayed in said fourth image sub-frame location.

21. (Original) The system of claim 19, wherein said wobbling device is further configured to displace said light beam between the display of each of said plurality of color image sub-frames in a manner wherein, in the following order:

a first color image sub-frame corresponding to said first color is displayed in said first image sub-frame location;

a first color image sub-frame corresponding to said second color is displayed in said second image sub-frame location;

a first color image sub-frame corresponding to said third color is displayed in said first image sub-frame location;

a second color image sub-frame corresponding to said first color is displayed in said second image sub-frame location;

a second color image sub-frame corresponding to said second is displayed in said first image sub-frame location;

a second color image sub-frame corresponding to said third color is displayed in said second image sub-frame location;

a third color image sub-frame corresponding to said first color is displayed in said third image sub-frame location;

a third color image sub-frame corresponding to said second color is displayed in said fourth image sub-frame location;

a third color image sub-frame corresponding to said third color is displayed in said third image sub-frame location;

a fourth color image sub-frame corresponding to said first color is displayed in said fourth image sub-frame location;

a fourth color image sub-frame corresponding to said second color is displayed in said third image sub-frame location; and

a fourth color image sub-frame corresponding to said third color is displayed in said fourth image sub-frame location.

22. (Original) The system of claim 1, wherein said modulator comprises a liquid crystal on silicon (LCOS) array.

23. (Original) The system of claim 1, wherein said modulator comprises a micromirror array.

24. (Original) The system of claim 1, wherein said wobbling device comprises a galvanometer mirror.

25. (Original) The system of claim 2, wherein said sequential color device comprises a color wheel.

26. (Original) A display system for displaying an image, comprising:

a modulator configured to produce a light beam that sequentially bears a plurality of color image sub-frames, said plurality of color image sub-frames divided into a number of groups of first, second, and third color image sub-frames of different colors;

display optics configured to display said light beam such that said plurality of color image sub-frames are successively displayed to form said image; and

a wobbling device configured to displace said light beam such that said first and second image sub-frames in each of said number of groups are displayed in one of a number of image sub-frame locations and said third image sub-frame in each of said number of groups is displayed in another of said number of image sub-frame locations.

27. (Original) The system of claim 26, further comprising:

an image processing unit configured to process image data defining said image and generate said image sub-frames; and

a sequential color device configured to shine a color light beam on a face of said modulator, said color light beam having a color that sequentially rotates through said plurality of colors;

wherein said modulator is configured to modulate said color light beam according to said number of color image sub-frames to produce said light beam bearing said plurality of color image sub-frames.

28. (Original) The system of claim 26, wherein said number of groups is equal to said number of image sub-frame locations.

29. (Original) The system of claim 28, wherein said number of image sub-frame locations comprises:

a first image sub-frame location;

a second image sub-frame location;

a third image sub-frame location; and

a fourth image sub-frame location.

30. (Original) The system of claim 29, wherein:

said second image sub-frame location is spatially offset by a first offset distance from said first image sub-frame location;

said third image sub-frame location is spatially offset by a second offset distance from said second image sub-frame location; and

said fourth image sub-frame location is spatially offset by a third offset distance from said third image sub-frame location.

31. (Original) The system of claim 30, wherein:

said first offset distance comprises a vertical offset distance and a horizontal offset distance, said second image sub-frame location being vertically offset from said first image sub-frame location by said vertical offset distance and horizontally offset from said first image sub-frame location by said horizontal offset distance;

said second offset distance comprises said vertical offset distance, said third image sub-frame location being vertically offset from said second image sub-frame location by said vertical offset distance; and

said third offset distance comprises said vertical offset distance and said horizontal offset distance, said fourth image sub-frame location being vertically

offset from said first image sub-frame location by said vertical offset distance and horizontally offset from said third image sub-frame location by said horizontal offset distance.

32. (Original) The system of claim 31, wherein said vertical offset distance and said horizontal offset distance are substantially equal to one-half of a pixel.

33. (Original) The system of claim 30, wherein said number of groups comprises a first, second, third, and fourth group of color image sub-frames.

34. (Original) The system of claim 33, wherein said wobbling device is further configured to displace said light beam such that:

said first and second color image sub-frames in said first group are displayed in said first image sub-frame location;

said third color image sub-frame in said first group is displayed in said third image sub-frame location;

said first and second color image sub-frames in said second group are displayed in said second image sub-frame location;

said third color image sub-frame in said second group is displayed in said fourth image sub-frame location;

said first and second color image sub-frames in said third group are displayed in said fourth image sub-frame location;

said third color image sub-frame in said third group is displayed in said second image sub-frame location;

said first and second color image sub-frames in said fourth group are displayed in said third image sub-frame location; and

said third color image sub-frame in said fourth group is displayed in said first image sub-frame location.

35. (Original) The system of claim 33, wherein said wobbling device is further configured to displace said light beam such that:

said first and second color image sub-frames in said first group are displayed in said first image sub-frame location;

said third color image sub-frame in said first group is displayed in said fourth image sub-frame location;

said first and second color image sub-frames in said second group are displayed in said second image sub-frame location;

said third color image sub-frame in said second group is displayed in said third image sub-frame location;

said first and second color image sub-frames in said third group are displayed in said third image sub-frame location;

said third color image sub-frame in said third group is displayed in said second image sub-frame location;

said first and second color image sub-frames in said fourth group are displayed in said fourth image sub-frame location; and

said third color image sub-frame in said fourth group is displayed in said first image sub-frame location.

36. (Original) The system of claim 26, wherein:

said first image sub-frame in each of said groups comprises a red color image sub-frame;

said second image sub-frame in each of said groups comprises a blue color image sub-frame; and

said third image sub-frame in each of said groups comprises a green color image sub-frame.

37. (Original) A method of displaying an image, said method comprising:

producing a light beam that sequentially bears a plurality of color image sub-frames with a modulator, wherein each color image sub-frame uniquely corresponds to one color in a plurality of colors;

displaying said light beam such that said plurality of color image sub-frames are successively displayed to form said image; and

displacing said light beam between display of each of said color image sub-frames such that a color image sub-frame corresponding to each color in said plurality of colors is displayed in each of a number of image sub-frame locations.

38. (Original) The method of claim 37, further comprising:

processing image data defining said image and generating said image sub-frames;

shining a color light beam on a face of said modulator, said color light beam having a color that sequentially rotates through said plurality of colors ; and

modulating said color light beam according to said number of color image sub-frames to produce said light beam bearing said plurality of color image sub-frames.

39. (Original) The method of claim 37, wherein said plurality of color image sub-frames comprises a number of color image sub-frames equal to said number of image sub-frame locations multiplied by said plurality of colors.

40. (Original) The method of claim 39, wherein said number of image sub-frame locations comprises:

a first image sub-frame location; and

a second image sub-frame location;

wherein said second image sub-frame location is spatially offset by an offset distance from said first image sub-frame location.

41. (Original) The method of claim 40, wherein said offset distance comprises a vertical offset distance and a horizontal offset distance, said second image sub-frame location being vertically offset from said first image sub-frame location by said vertical offset distance and horizontally offset from said first image sub-frame location by said horizontal offset distance.

42. (Original) The method of claim 41, wherein said vertical offset distance and said horizontal offset distance are substantially equal to one-half of a pixel.

43. (Original) The method of claim 40, wherein said offset distance comprises a vertical offset distance, said second image sub-frame location being vertically offset from said first image sub-frame location by said vertical offset distance.

44. (Original) The method of claim 40, wherein said offset distance comprises a horizontal offset distance, said second image sub-frame location being horizontally offset from said first image sub-frame location by said horizontal offset distance.

45. (Original) The method of claim 40, wherein said step of displaying said light beam comprises alternately displaying said plurality of color image sub-frames in said first image sub-frame location and in said second image sub-frame location.

46. (Original) The method of claim 45, wherein said plurality of colors comprises a first color, a second color, and a third color.

47. (Original) The method of claim 46, wherein said step of displaying said light beam comprises, in the following order:

displaying a first color image sub-frame corresponding to said first color in said first image sub-frame location;

displaying a first color image sub-frame corresponding to said second color in said second image sub-frame location;

displaying a first color image sub-frame corresponding to said third color in said first image sub-frame location;

displaying a second color image sub-frame corresponding to said first color in said second image sub-frame location;

displaying a second color image sub-frame corresponding to said second color in said first image sub-frame location; and

displaying a second color image sub-frame corresponding to said third color in said second image sub-frame location.

48. (Original) The method of claim 45, wherein said plurality of colors comprises a first color, a second color, a third color, and a fourth color.

49. (Original) The method of claim 48, wherein said step of displaying said light beam comprises, in the following order:

displaying a first color image sub-frame corresponding to said first color of said first group in said first image sub-frame location;

displaying a first color image sub-frame corresponding to said second color of said first group in said second image sub-frame location;

displaying a first color image sub-frame corresponding to said third color in said first image sub-frame location;

displaying a first color image sub-frame corresponding to said fourth color in said second image sub-frame location;

displaying a second color image sub-frame corresponding to said first color in said second image sub-frame location;

displaying a second color image sub-frame corresponding to said second color in said first image sub-frame location;

displaying a second color image sub-frame corresponding to said third color in said second image sub-frame location; and

displaying a second color image sub-frame corresponding to said fourth color in said first image sub-frame location.

50. (Original) The method of claim 39, wherein said number of image sub-frame locations comprises:

a first image sub-frame location;

a second image sub-frame location;

a third image sub-frame location; and

a fourth image sub-frame location.

51. (Original) The method of claim 50, wherein:

said second image sub-frame location is spatially offset by a first offset distance from said first image sub-frame location;

said third image sub-frame location is spatially offset by a second offset distance from said second image sub-frame location; and

said fourth image sub-frame location is spatially offset by a third offset distance from said third image sub-frame location.

52. (Original) The method of claim 51, wherein:

said first offset distance comprises a vertical offset distance and a horizontal offset distance, said second image sub-frame location being vertically offset from said first image sub-frame location by said vertical offset distance and horizontally offset from said first image sub-frame location by said horizontal offset distance;

said second offset distance comprises said vertical offset distance, said third image sub-frame location being vertically offset from said second image sub-frame location by said vertical offset distance; and

said third offset distance comprises said vertical offset distance and said horizontal offset distance, said fourth image sub-frame location being vertically offset from said first image sub-frame location by said vertical offset distance and horizontally offset from said third image sub-frame location by said horizontal offset distance.

53. (Original) The method of claim 52, wherein said vertical offset distance and said horizontal offset distance are substantially equal to one-half of a pixel.

54. (Original) The method of claim 51, wherein said step of displaying said light beam comprises alternately displaying said plurality of color image sub-frames in said first, second, third, and fourth image sub-frame locations.

55. (Original) The method of claim 54, wherein said plurality of colors comprises a first color, a second color, and a third color.

56. (Original) The method of claim 55, wherein said step of displaying said light beam comprises, in the following order:

displaying a first color image sub-frame corresponding to said first color in said first image sub-frame location;

displaying a first color image sub-frame corresponding to said second color in said second image sub-frame location;

displaying a first color image sub-frame corresponding to said third color in said third image sub-frame location;

displaying a second color image sub-frame corresponding to said first color in said fourth image sub-frame location;

displaying a second color image sub-frame corresponding to said second color in said first image sub-frame location;

displaying a second color image sub-frame corresponding to said third color in said second image sub-frame location;

displaying a third color image sub-frame corresponding to said first color in said third image sub-frame location;

displaying a third color image sub-frame corresponding to said second color in said fourth image sub-frame location;

displaying a third color image sub-frame corresponding to said third color in said first image sub-frame location;

displaying a fourth color image sub-frame corresponding to said first color in said second image sub-frame location;

displaying a fourth color image sub-frame corresponding to said second color in said third image sub-frame location; and

displaying a fourth color image sub-frame corresponding to said third color in said fourth image sub-frame location.

57. (Original) The method of claim 55, wherein said step of displaying said light beam comprises:

displaying a first color image sub-frame corresponding to said first color in said first image sub-frame location;

displaying a first color image sub-frame corresponding to said second color in said second image sub-frame location;

displaying a first color image sub-frame corresponding to said third color in said first image sub-frame location;

displaying a second color image sub-frame corresponding to said first color in said second image sub-frame location;

displaying a second color image sub-frame corresponding to said second color in said first image sub-frame location;

displaying a second color image sub-frame corresponding to said third color in said second image sub-frame location;

displaying a third color image sub-frame corresponding to said first color in said third image sub-frame location;

displaying a third color image sub-frame corresponding to said second color in said fourth image sub-frame location;

displaying a third color image sub-frame corresponding to said third color in said third image sub-frame location;

displaying a fourth color image sub-frame corresponding to said first color in said fourth image sub-frame location;

displaying a fourth color image sub-frame corresponding to said second color in said third image sub-frame location; and

displaying a fourth color image sub-frame corresponding to said third color in said fourth image sub-frame location.

58. (Original) The method of claim 37, wherein said modulator comprises a liquid crystal on silicon (LCOS) array.

59. (Original) The method of claim 37, wherein said modulator comprises a micromirror array.

60. (Original) The method of claim 37, wherein said wobbling device comprises a galvanometer mirror.

61. (Original) The method of claim 37, wherein said generating a light beam is performed with a color wheel.

62. (Original) A method of displaying an image, comprising:

producing a light beam that sequentially bears a plurality of color image sub-frames, said plurality of color image sub-frames divided into a number of groups of first, second, and third color image sub-frames of different colors;

displaying said light beam such that said plurality of color image sub-frames are successively displayed to form said image; and

displacing said light beam such that said first and second image sub-frames in each of said number of groups are displayed in one of a number of image sub-frame locations and said third image sub-frame in each of said number

of groups is displayed in another of said number of image sub-frame locations.

63. (Original) The method of claim 62, further comprising:

processing image data defining said image and generating said image sub-frames;

shining a color light beam on a face of said modulator, said color light beam having a color that sequentially rotates through said plurality of colors ; and

modulating said color light beam according to said number of color image sub-frames to produce said light beam bearing said plurality of color image sub-frames.

64. (Original) The method of claim 62, wherein said number of groups is equal to said number of image sub-frame locations.

65. (Original) The method of claim 64, wherein said number of image sub-frame locations comprises:

a first image sub-frame location;

a second image sub-frame location;

a third image sub-frame location; and

a fourth image sub-frame location.

66. (Original) The method of claim 65, wherein:

said second image sub-frame location is spatially offset by a first offset distance from said first image sub-frame location;

said third image sub-frame location is spatially offset by a second offset distance from said second image sub-frame location; and

said fourth image sub-frame location is spatially offset by a third offset distance from said third image sub-frame location.

67. (Original) The method of claim 66, wherein:

said first offset distance comprises a vertical offset distance and a horizontal offset distance, said second image sub-frame location being vertically offset from said first image sub-frame location by said vertical offset distance and horizontally offset from said first image sub-frame location by said horizontal offset distance;

said second offset distance comprises said vertical offset distance, said third image sub-frame location being vertically offset from said second image sub-frame location by said vertical offset distance; and

said third offset distance comprises said vertical offset distance and said horizontal offset distance, said fourth image sub-frame location being vertically offset from said first image sub-frame location by said vertical offset distance and horizontally offset from said third image sub-frame location by said horizontal offset distance.

68. (Original) The method of claim 67, wherein said vertical offset distance and said horizontal offset distance are substantially equal to one-half of a pixel.

69. (Original) The method of claim 68, wherein said number of groups comprises a first, second, third, and fourth group of color image sub-frames.

70. (Original) The method of claim 69, wherein said step of displaying said light beam comprises:

displaying said first and second color image sub-frames of said first group in said first image sub-frame location;

displaying said third color image sub-frame of said first group in said third image sub-frame location;

displaying said first and second color image sub-frames of said second group in said second image sub-frame location;

displaying said third color image sub-frame of said second group in said fourth image sub-frame location;

displaying said first and second color image sub-frames of said third group in said fourth image sub-frame location;

displaying said third color image sub-frame of said third group in said second image sub-frame location;

displaying said first and second color image sub-frames of said fourth group in said third image sub-frame location; and

displaying said third color image sub-frame of said fourth group in said first image sub-frame location.

71. (Original) The method of claim 69, wherein said step of displaying said light beam comprises:

displaying said first and second color image sub-frames of said first group in said first image sub-frame location;

displaying said third color image sub-frame of said first group in said fourth image sub-frame location;

displaying said first and second color image sub-frames of said second group in said second image sub-frame location;

displaying said third color image sub-frame of said second group in said third image sub-frame location;

displaying said first and second color image sub-frames of said third group in said third image sub-frame location;

displaying said third color image sub-frame of said third group in said second image sub-frame location;

displaying said first and second color image sub-frames of said fourth group in said fourth image sub-frame location; and

displaying said third color image sub-frame of said fourth group in said first image sub-frame location.

72. (Original) The method of claim 62, wherein:

said first image sub-frame in each of said groups comprises a red color image sub-frame;

said second image sub-frame in each of said groups comprises a blue color image sub-frame; and

said third image sub-frame in each of said groups comprises a green color image sub-frame.

73. (Original) A system for displaying an image, said system comprising:

means for producing a light beam that sequentially bears a plurality of color image sub-frames, wherein each color image sub-frame corresponds to one color in a plurality of colors;

means for displaying said light beam such that said plurality of color image sub-frames are successively displayed to form said image; and

means for displacing said light beam between display of each of said plurality of color image sub-frames such that a color image sub-frame corresponding to each color in said plurality of colors is displayed in each of a number of image sub-frame locations.

74. (Original) A system for displaying an image, comprising:

means for producing a light beam that sequentially bears a plurality of color image sub-frames, said plurality of color image sub-frames divided into a number of groups of first, second, and third color image sub-frames of different colors;

means for displaying said light beam such that said plurality of color image sub-frames are successively displayed to form said image; and

means for displacing said light beam such that said first and second image sub-frames in each of said number of groups are displayed in one of a number of image sub-frame locations and said third image sub-frame in each of said number of groups is displayed in another of said number of image sub-frame locations.